

"Inoculation Device"

Field of the Invention

This invention relates to an inoculation means.

Throughout the specification, unless the context requires otherwise, the word "comprise" or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers.

Background of the Invention

This invention relates to a means to facilitate inoculation of patients which requires the creation of a number of punctures in the skin of a patient. An example of the application of the invention relates to inoculation against small pox by utilisation of a suitable vaccine. It is a characteristic of such inoculation that rather than inject the medium into the muscle tissue of the body it is necessary to introduce the medium into the skin or epidermis of the patient at a number of locations.

15 Disclosure of the Invention

According to one aspect the invention resides in an inoculation device comprising a body having a fixed portion and a moveable portion, said fixed portion having a front face, the moveable portion supported from the fixed portion rearward of the front face, a needle supported from the movable portion to be moveable longitudinally on relative movement of the movable portion with respect to the fixed portion, towards and away from the front face whereby the free end of the needle is caused to undergo a longitudinal movement between a retracted position at which the free end of the needle lies to the rear of the front face and an extended position at which the free end of the needle extends in front of the front face, said movable portion being biased to the retracted position, an indexing means provided between the moveable portion and the fixed portion to cause an

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indexing lateral movement of the needle in a direction transverse to the longitudinal movement through a plurality of stations in association with the longitudinal movement of the needle wherein on each longitudinal movement the needle is located at a separate station

5 According to a preferred feature of the invention the front face is closed and is provided with an aperture which defines a path for the lateral movement of the needle and through which the needle extends when in its extended position, said stations being located along said path.

According to a preferred feature of the invention the indexing means causes the
10 needle to move to a final station located beyond the path defined by the aperture on completion of passage of the needle along the path.

According to a preferred feature of the invention the needle occupies an initial position prior to undergoing any longitudinal movement at which the needle is retracted and the needle is out of longitudinal alignment with the path and on the
15 initial movement of the needle it moves to an initial position and into longitudinal alignment with the path.

According to another aspect the invention resides in an inoculation device comprising a body having a fixed portion and a moveable portion, said fixed portion comprising a substantially cylindrical body having a front face, the
20 moveable portion being slidably and rotatably within the body, a needle supported from the movable portion to be moveable longitudinally on relative movement of the movable portion with respect to the fixed portion, towards and away from the front face whereby free end of the needle is caused to undergo a longitudinal movement between a retracted position at which the free end of the needle lies
25 rearward of the front face and an extended position at which the free end of the needle extends forward of the front face, said movable portion being biased to the retracted position, the needle being supported such that its central axis is offset from the axis of rotation of the movable portion within the fixed portion an indexing means provided between the moveable portion and the fixed portion to cause an
30 indexing lateral movement of the needle in a direction transverse to the

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longitudinal movement about the axis of rotation, in association with the longitudinal movement of the needle wherein on each longitudinal movement the needle is located at a separate station.

According to a preferred feature of the invention the movable portion is capable of
5 rotational movement in one direction about the axis of rotation.

According to a preferred feature of the invention the front face is closed and is provided with an at least partially annular aperture which defines a path for the lateral movement of the needle and through which the needle extends when in its extended position, said stations being located along said path. According to one
10 embodiment the aperture is part annular. According to a preferred feature of the invention the indexing means causes the needle to move to a final station located beyond the path on completion of passage of the needle along the path. According to a preferred feature of the invention the needle occupies an initial position prior to undergoing any longitudinal movement at which the needle is retracted and the needle is out of longitudinal alignment with the path and on the initial movement of the needle it moves to an initial station into longitudinal alignment with the path.
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According to a preferred feature of both aspects of the invention the indexing means is adapted to cause the lateral movement whilst the needle is undergoing
20 its longitudinal movement. According to a preferred feature the indexing means is adapted to cause the lateral movement during the movement of the needle from its retracted position to its extended position. According to an alternative preferred feature the indexing means is adapted to cause the lateral movement during the movement of the needle from its extended position to its retracted position.
25 According to an alternative preferred feature the indexing means is adapted to cause the lateral movement during the movement of the needle from its retracted position to its extended position and from its extended position to its retracted position.

According to a preferred feature of both aspects of the invention the front face is
30 open.

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